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Jameco Part number 132679

Path: A:\

File: READ .ME 1,084 .a.. 4-22-96 10:14:58 am Page 1

EPICtm Pocket PIC Programmer 1.3x READ.ME file

This diskette contains the files the necessary files for the construction and operation of the EPIC Programmer. The files on this disk should include:

READ.ME	this file
BUILD.TXT	parts list and construction details
DEMO84.SRC	PIC16C84 demonstration source file
DEMO84.HEX	PIC16C84 demonstration object file
EPIC.EXE	EPIC programming software
EPIC.TXT	EPIC programmer instruction file
PM.EXE	PIC macro assembler
PM.TXT	PIC macro assembler instruction file
PMSUP.TXT	PM Parallax instruction set supplement
\INC*.INC	include file for each PIC device

Please read through the instruction files if you have any problems using your EPIC Programmer. If you require assistance, please contact:

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Path: A:\

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EPICtm Pocket PIC Programmer Parts List and Construction Instructions

EPIC Programmer Parts List

Most of the following parts are available from Radio Shack. Any additional parts may be acquired from Jameco Electronics, JDR, or Digi-Key. The Radio Shack part number is listed for reference.

Label	Description	Radio Shack Part No.
R1	240 (270) ohm 1/4W resistor	271-1314
R2*	2.2K 1/4W resistor	271-1325
R3,4,5,8,9	10K 1/4W resistor	271-1335
R6,7,11	1K resistor 1/4W resistor	271-1321
R10	470 ohm 1/4W resistor	271-1317
R12	100 ohm 1/4W resistor	271-1311
RV1*	4.7K (5K) PCB mount trimmer	271-281
C1**	100uf 50V radial electrolytic capacitor	272-1044
C2	10uf 35V radial electrolytic capacitor	272-1025
C3	.1uf 50V monolythic capacitor	272-109
BR1**	1A 100PIV diode bridge	276-1152
LED1	green LED	276-022
LED2	red LED	276-041
Q1,2	2N3906 (MPS2907) PNP transistor	276-2023
REG1	7805T 5 volt regulator	276-1770
REG2	LM317T variable regulator	276-1778
U1	7407 open collector buffer IC	
J1	25 pin -MALE- DB25 connector	
J2**	DC power jack 2.1mm	
J3	10 pin header	
B1,2	9 volt battery snaps	270-325
	14 pin IC socket	276-1999
	18 pin IC (or ZIF) socket	276-1992
S1	2 pin Battery ON header	
	2 pin shorting jumper	

* Install R2 or RV1, not both.

** C1, BR1 and J2 are not necessary for battery operation.

EPIC Programmer Assembly Instructions

1. Solder in resistors R1, and R3-R12. It is recommended that trimmer RV1 be used instead of resistor R2.
2. Solder in sockets for U1 and U2 if U2 is not a ZIF socket.
3. Solder in trimmer RV1.
4. Solder in transistors Q1 and Q2.
5. Solder in capacitors C1-3. Note the polarity of C1 and C2. C1 is not necessary for battery only operation.
6. Solder in bridge BR1 and J2 if AC operation is desired.
7. Solder in DB25 connector J1.
8. Solder in LEDs LED1 and LED2. Be sure the flat side of each LED is away from connector J1.
9. Solder in the 10 pin header J3.
10. Solder in Battery ON 2 pin header. Place the shorting jumper across the header before soldering to prevent the pins from moving when heated. A piece of wire may be soldered into the header holes if the Battery ON jumper is not desired. In that case the batteries may be connected and disconnected to turn the programmer on and off.
11. Solder in the 9 volt battery snaps B1 and B2. Make sure the polarity noted on the board matches the polarity of the 9 volt battery terminals. Double check this operation as getting one or both backwards is not a good thing.
12. If U2 is a ZIF socket, solder it in now.
13. Solder REG1 and REG2 into place. Be sure the larger heat sink side is away from connector J1.

Before proceeding, check the almost completed board for the proper voltages.

Adjust trimmer RV1 to about the middle of its range.

Connect an AC adapter or the two 9 volt batteries and Battery ON jumper. At this point neither regulator should get hot. If either one does, immediately disconnect power and check for improper battery connector polarity or regulators in backwards.

Measure the output of the variable regulator REG2 and adjust trimmer RV1 to give about 13.5 volts. The easiest place to measure the voltage is between the heatsink tab of the 7805T REG1 (ground) and the end of R1 furthest from the battery connectors.

Measure the output of the 7805T REG1 for 5 volts. The best place to

measure is between pin 7 (ground) and pin 14 of the 7407 U1.

If the voltages are not correct, check the polarity of the battery connections and the regulators. Also check to see that all of the other components are properly soldered in place.

14. Once all of the voltages check out, install U1 7407 in the 14 pin socket. Make sure the end with the notch (pin 1) is away from the battery connectors.

Jameco Part number 132679

P.5 of 7 PIN 132679

Disk Volume: 6-18-96 8:36:43 am Page 1

22 logged files using 457,132 bytes

Path: A:\INC

13 tagged files using 91,837 bytes

P5X	.INC	2,947 .a..	2-13-96	9:01:38 am
P61	.INC	3,527 .a..	2-12-96	12:56:24 pm
P62	.INC	7,520 .a..	5-06-96	7:02:10 pm
P62X	.INC	5,268 .a..	5-06-96	7:02:38 pm
P63	.INC	9,705 .a..	5-06-96	7:03:00 pm
P64	.INC	8,263 .a..	2-12-96	1:04:38 pm
P65	.INC	10,678 .a..	5-06-96	7:03:28 pm
P70	.INC	4,622 .a..	5-06-96	7:04:02 pm
P71	.INC	4,579 .a..	2-12-96	12:58:28 pm
P72	.INC	8,307 .a..	5-06-96	7:04:40 pm
P73	.INC	10,495 .a..	5-06-96	7:04:52 pm
P74	.INC	11,529 .a..	2-12-96	1:00:36 pm
P84	.INC	4,397 .a..	3-21-96	3:53:44 pm

EPICtm Pocket PIC Programmer

The EPIC Programmer is an inexpensive PIC microcontroller programmer that will program the mid-range 18-pin PICs. These currently include the PIC16C61, PIC16C62x, PIC16C71 and the PIC16C84. An optional adapter is available to program the 40-pin PIC16C64, PIC16C65, PIC16C74, and the 28-pin PIC16C62, and PIC16C63 and PIC16C73. The EPIC Programmer can be powered with two 9 volt batteries or an optional AC adapter.

The EPIC Programmer connects to any PC compatible parallel port and includes an assembler and programming software. It is available either assembled or as a bare board. If you purchased a bare board, please see the parts list and assembly instructions on the included disk.

Hook-up

Make sure that the EPIC programming socket is empty until the programming software is executed. Also be sure that the EPIC Programmer is placed on an insulated surface to prevent the shorting out of traces on the bottom of it.

Connect the EPIC Programmer to a PC compatible parallel printer port using a 25 pin male to 25 pin female printer extension cable. The EPIC Programmer uses pins 2-6, 10, and 19-25. A serial cable may not have all of the necessary connections so be sure to use a printer extension cable. A suitable cable is available from us.

Make sure to connect the programmer to a **parallel printer** port. Connection to a serial port, which has a similar connector, may result in damage to the port or to the programmer.

If you are powering the EPIC Programmer with the optional AC adapter, plug it into the power connector on the programmer and then into a wall outlet.

If you are powering the EPIC Programmer with two 9 volt batteries, plug each battery onto the battery snaps. Connect the 2 pin shorting jumper to the 2 pin "Batt ON" jumper. It is a good idea to check the battery voltage from time to time or if there seems to be difficulty in programming parts.

WARNING: Do not connect a battery across the center snaps. Doing so shorts out the battery and may cause it to explode.

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The programmer should now be powered up and ready to program PICs.

> Note: one or both of the LEDs may be lit at this point. This is no cause for alarm. They both should go out when the EPIC programming software is run. Do not insert or remove a PIC when either light is on.

Software Installation

Create a subdirectory on your hard drive called EPIC or a name of your choosing by typing

> **md epic**

at the DOS prompt. Copy all of the files from the included floppy disk into the newly created subdirectory by typing

> **xcopy a:*.* epic /s**

Operation

The next task is simply to write your program and assemble it using the assembler on the included disk. Instructions for the use of the assembler are also on the disk.

Once your program assembles properly, it may be programmed into a PIC using the EPIC Programmer software. Start the EPIC Programmer software by typing **'epic'** in the directory you created and enter **'alt-o'** to open your assembled object file. Make sure the proper device type and device characteristics are selected.

Insert a PIC into the EPIC Programmer programming socket and press **'alt-p'** to program it. The end of the PIC with the notch, pin 1, should be away from the battery connectors. If the PIC is a 16C84 or another EEPROM part, it is usually not necessary to erase it before programming.

For further instructions on the operation of the EPIC Programmer, please see the included disk.

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